



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/525,240

05/13/2005

Koji Miyata

Q86264

7140

23373 7590 08/29/2008
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

CROWELL, ANNA M

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

08/29/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/525,240	Applicant(s) MIYATA ET AL.	
	Examiner Michelle Crowell	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-20 is/are pending in the application.
- 4a) Of the above claim(s) 2-5 and 7-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/08</u> | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1792

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species III, Figure 12 (claims 1, 6, 20) in the reply filed on October 24, 2007 is acknowledged.
2. Claims 2-5 and 7-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (JP 2001-338912) or Morimoto (J.P. 2001-077095) in view of Nishijima et al. (06-181187).

Art Unit: 1792

Referring to Drawings 1 and 2 and paragraphs [0025]-[0033], Ito et al. discloses a magnetic field generator 21 for magnetron plasma, comprising a plurality of magnetic segments 22 provided on the outer side of a process chamber 1 for performing a predetermined process on a substrate placed in said chamber for generating a multi-pole magnetic field along the circumference of said substrate, characterized in that the arrangement is such that a strength of said multi-pole magnetic field in said process chamber can be controlled 25.

Referring to Drawings 1, 2, 5, and 6 and paragraphs [0037]-[0041], [0057]-[0059], Morimoto discloses a magnetic field generator 23 for magnetron plasma, comprising a plurality of magnetic segments 24 provided on the outer side of a process chamber 2 for performing a predetermined process on a substrate placed in said chamber for generating a multi-pole magnetic field along the circumference of said substrate, characterized in that the arrangement is such that a strength of said multi-pole magnetic field in said process chamber can be controlled 25, 27.

Ito et al. or Morimoto fail to teach a magnetic field generator comprises an upper magnetic field generating mechanism and a lower magnetic field generating mechanism and in that said upper and lower magnetic field generating mechanisms are arranged to move vertically relative to each other.

Referring to paragraph [0002], Nishijima et al. teaches a magnetic field generator comprising an upper magnetic field generating mechanism 21 and a lower magnetic field generating mechanism 31 in order to confine the plasma. Thus, it would have been obvious to

Art Unit: 1792

one of ordinary skill in the art at the time of the invention to modify the magnet field generator of Ito et al. or Morimoto to have an upper magnetic field generating mechanism 21 and a lower magnetic field generating mechanism 31 since this is an alternate arrangement for a magnet field generator that would enhance plasma confinement. In addition, referring to Drawing 1 and paragraphs [0014]-[0019], Nishijima et al. teaches a plasma processing apparatus using a moving mechanism 22, 32 which changes a gap vertically between the upper and lower magnetic field generating mechanisms 21, 31 in order to enhance plasma uniformity. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to vertically move the upper and lower magnetic field generating mechanisms using a moving mechanism as taught by Nishijima et al. in order to enhance plasma uniformity.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (JP 2001-338912) or Morimoto (J.P. 2001-077095) in view of Arami et al. (US 6,014,943).

The teachings of Ito et al. or Morimoto have been discussed above.

Ito et al. or Morimoto fail to teach that each of the magnet segments is substantially in the shape of a cylinder.

It should be noted that Ito et al. (par.[0028]) discloses that the shape of the magnet segments can be altered. Referring to Figures 1-3 and column 6, lines 40-67, Arami et al. shows that it is conventionally known in the art for each of the magnet segments to be substantially in the shape of the cylinder. In addition, the shape of the claimed magnet segments is considered a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular shape of the claimed magnet segments was significant.

Art Unit: 1792

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the shape of the magnet segments of Ito et al. or Morimoto to be substantially cylindrical as taught by Arami et al. since the shape of the magnet segments is considered an obvious design choice to enhance the desired process.

Response to Arguments

7. Applicant's arguments filed June 5, 2008 have been fully considered but they are not persuasive.

Applicant has argued that the permanent magnets 21 and 31 of Nishijima are constructed differently and function differently as compared to the upper and lower magnetic field generating mechanism since the present invention includes a plurality of magnetic segment to generate a multi-pole magnetic field. However, it should be noted that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Furthermore, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In the instant application, the primary references Ito et al. or Morimoto disclose a magnetic field generating mechanism including a plurality of magnetic segments arranged in a ring to generate a multi-pole magnetic field (Drawings 1 and 2 and paragraphs [0025]-[0033] of

Art Unit: 1792

Ito et al., Drawings 1, 2, 5, and 6 and paragraphs [0037]-[0041], [0057]-[0059] of Morimoto).

Nishijima teaches a moving mechanism 22, 32 used to move the magnetic field generating mechanism 21, 31 in the vertical direction in order to achieve uniform plasma distribution (par. [0015]-[0016], [0039]-[0042]). Therefore, the combination of Ito et al. or Morimoto in view of Nishijima teaches an upper and lower magnetic field generating mechanism which are vertically movable and each magnet field generating mechanism (i.e. upper and lower) including a plurality of magnetic segments arranged in a ring to generate a multi-pole magnetic field. Thus, Nishijima was simply applied for the teaching of an upper and lower magnetic field generating mechanism and vertically moving the upper and lower magnetic field generating mechanism and not for the type of magnets used in the upper and lower magnetic field generating mechanism (Ito et al. or Morimoto). Hence, the combination of Ito et al. or Morimoto in view of Nishijima satisfy the claimed requirements.

Applicant has argued that the moving mechanisms 22, 32 of Nishijima never controls the gap vertically between the upper and lower magnetic field generating mechanism 21, 31; however, according to the last lines of paragraphs [0015]-10016], Nishijima clearly states that moving mechanism 22, 32 are used to vertically move the upper and lower magnetic field generating mechanism 21, 31. Furthermore, by adjusting the upper and lower magnetic field generating mechanism, uniform plasma distribution can be achieved (par. [0039]-[0042]). Thus, the combination of Ito et al. or Morimoto in view of Nishijima satisfy the claimed requirements.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (571)272-1432. The examiner can normally be reached on M-Th (9:30 -6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1792

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michelle Crowell/
Examiner, Art Unit 1792

/Parviz Hassanzadeh/
Supervisory Patent Examiner, Art Unit 1792